

CLAIMS

1. A method for excising at least one sample in an array of samples comprising:
- 5 (a) recording an electronic image of the position of at least one sample relative to the other samples in the array;
- (b) utilising the recorded image to control a cutting tool to excise the at least one sample;
- (c) picking up and the excised sample in the cutting tool retaining the same in the cutting tool and moving the cutting tool relative to a selected
- 10 location; and
- (d) depositing the at least one excised sample at the selected location.
2. An apparatus for excising at least one sample from an array of samples comprising:-
- 15 (a) means for recording an electronic image of the position of at least one sample relative to the other samples in the array;
- (b) means for utilising the recorded electronic image to control a cutting tool to excise the at least one sample from the array and retain the sample in the tool;
- 20 (c) means for moving the cutting tool relative to a selected location; and
- (d) means for causing the cutting tool to deposit the at least one excised sample at the selected location;
- the arrangement being such that means (b) causes the cutting tool to
- 25 excise the at least one sample according to the position of the sample relative to the other samples in the array, as determined by means (a).
3. ~~The apparatus of claim 2~~ <sup>1</sup> ~~Apparatus as claimed in claim 2~~ further comprising:
- e) <sup>1</sup> a table means for supporting the array of samples;
- f) display means for displaying the electronic image of the array
- 30 on a screen or the like;
- g) means for selecting a sample on the array for excising by the cutting tool; and
- h) means for moving the table means relative to the cutting tool in the plane of the array.
- 35 4. ~~The apparatus of claim 3~~ <sup>1</sup> ~~Apparatus as in claim 3~~ wherein the means for recording an electronic image of at least one sample is an apparatus which acquires a

digital image such as a digital camera or a digital scanner, the control means includes a computer and an image file relating to a number of arrays of samples is stored on the computer.

5. ~~The apparatus as in claim 3~~ wherein the array of samples is in a plane, the x-y plane, and the table means is movable in both the x and y directions so that the spot to be excised is placed underneath the cutting tool which moves along the z axis direction and which preferably also rotates about the z axis in order to facilitate cutting of the sample.

6. A cutting tool ~~for use in the apparatus of claims 2 to 5 or method of claim 1~~ comprising:

a cutting head defining a central bore adapted to cut and retain a sample of material;

- a plunger disposed in the bore defining a rod which is disposed in and movable along the bore, the plunger being either formed of a ferro-magnetic material or having a portion of ferro-magnetic material attached thereto; and

a solenoid disposed around the plunger or electromagnetic material, wherein operation of the solenoid causes the plunger to move to eject the spot from the cutting head.

7. ~~A cutting tool for use in the apparatus of any one of claims 2 to 5 or the method of claim 1~~ comprising:

- (a) a cutting tip means having a bore therethrough;
  - (b) a cutting tip holder for holding the cutting tip means;
  - (c) an ejector pin one end of which is disposed in bore of the cutting tip, the pin being moveable along the bore of the cutting tip;
  - (d) a magnet or a piece of ferromagnetic material integral with or attached to the ejector pin distal from the one end;
  - (e) a solenoid disposed around the magnet or ferro magnetic material for causing the pin to move in the bore in a direction which expels material from the cutting tip when the solenoid is energised; and
- return means for causing the pin to move in the opposite direction when the solenoid is not energised.

8. ~~The cutting tool as claimed in claim 7~~ wherein a magnet is attached to the ejector pin distal from the one end and wherein the return means is also a magnet.

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*The OF claim 7*

9. ~~A cutting tool as claimed in claim 7~~ wherein the return means is a spring.

10. ~~A cutting tool as claimed in any preceding claim~~ wherein the cutting tip is removable and disposable.

5 11. ~~A cutting tool as claimed in any of claims 7 to 10~~ wherein the cutting tool includes a body portion comprising a generally cylindrical tube defining a central bore, in which the solenoid is disposed, with the lower end of the bore being closed by the cutting tip holder.

10 12. ~~A cutting tool as claimed in any of claims 7 to 11~~ wherein the cutting tip has an annular cross section with a wider cylindrical portion which locates inside of the central bore of the body portion and tapers in a generally conical fashion to a narrow portion which forms the cutting head, the tip being made of a translucent material such as plastic or glass.